

CLAIMS:

1. A device for the determination of the position of an instrument (6) in a vascular system (8), comprising:
 - at least one localizer (4, 5) fitted to the instrument (6), the spatial position (\underline{r}_1 , \underline{r}_2) of which can be measured and by means of which the orientation ($\underline{r}_2 - \underline{r}_1$) and/or the shape of an instrument section can be measured;
 - a data processing unit (7) with a memory in which a vascular map (K) is stored, the data processing unit being set up to correct measured spatial positions (\underline{r}_1 , \underline{r}_2) of the localizer (4, 5), taking into account the vascular map (K) and a quality dimension, the quality dimension including weighted components measuring the deviation of the measured position and the deviation of the measured orientation and/or shape of the instrument section from the vascular layout (8) as represented by the vascular map (K).
2. A device as claimed in claim 1, characterized in that the localizer incorporates a magnetic field sensor (4, 5) of an electromagnetic localizing device.
3. A device as claimed in claim 1, characterized in that the data processing unit is set up to calculate a locally continuous transformation from individual corrections (\underline{k}_1 , \underline{k}_2).
4. A device as claimed in claim 1, characterized in that at least two localizers (4, 5) are attached to the instrument (6) in a known relative position (d), and in that the data processing unit (7) is set up to take account of this relative position (d) when correcting the measured positions (\underline{r}_1 , \underline{r}_2).
5. A device as claimed in claim 4, characterized in that the data processing unit (7) is set up further to correct the position (\underline{r}_2') of at least one localizer (4) corrected while taking account of the quality dimension in accordance with the vascular layout of the vascular map (K), so that the final corrected positions (\underline{r}_1' , \underline{r}_2'') likewise adopt the known relative position (d).

6. A Device as claimed in claim 1, characterized in that the data processing unit (7) is set up to output a warning if the corrected position (\underline{r}_1' , \underline{r}_2'') of the localizer (4, 5) includes an orientation ($\underline{r}_2'' - \underline{r}_1'$) and/or a shape of the instrument section deviating by more than a preset limit value from the measured orientation ($\underline{r}_2 - \underline{r}_1$) and/or shape.
- 5 7. A Device as claimed in claim 1, characterized by means (1) allowing the position of the localizer (4, 5) relative to the vascular map (K) to be verified.
- 10 8. A Device according to claim 1, characterized by an imaging device (1) for the generation of the vascular map (K).
9. A method for the determination of the position of an instrument (6) in a vascular system (8) with the aid of at least one localizer (4, 5) attached to the instrument (6) and of a vascular map (K), comprising the following steps:
- 15 a) Measurement of the spatial position (\underline{r}_1 , \underline{r}_2) of the localizer (4, 5) and of the orientation ($\underline{r}_2 - \underline{r}_1$) and/or shape of an instrument section;
- b) Correction of the measured spatial position (\underline{r}_1 , \underline{r}_2) with reference to a vascular map (K) and a quality dimension, the quality dimension including weighted components measuring on the one hand the deviation of the measured position of the localizer (4, 5) and
- 20 on the other hand the deviation of the measured orientation and/or shape of the instrument section from the vascular layout (8) according to the vascular map (K).
10. A method as claimed in claim 9, characterized in that a spatially continuous transformation is calculated on the basis of individual corrections (\underline{k}_1 , \underline{k}_2).